

## Programmers Bypassed

### Time Sharing Lets Users Grow

Dr. Donald Marsh, of the New York University Medical Center, has commented that the use of time-shared services - as opposed to batch-processing - gives his staff members a 'sense of accomplishment'. They feel themselves grow. T-S allows the learning scientist to work without the intervention of the computer programmer. Such intervention tended to make him lose interest. Consequently, the staff members are learning the use of computers much faster than they had been doing in the past.

The advantages of these human factors are in addition to the straightforward advantages of being able to get the work handled quickly. This, in itself, has led to a five-fold increase in the speed with which tests can be handled in the center. It has, also, allowed the speed of actual discovery work to be increased; particularly where the computations normally took many times longer than the experiment itself. Typical cases were experiments dealing with muscle contraction, models of neural nets for brain study, etc.

The medical center is one of the world's largest medical research and teaching complexes and is using the GE Time-Sharing service centered at 570 Lexington Avenue, New York.

## CUISINE by COMPUTER

### Spectra 70 Selects

#### Restaurants in N. Y.

With more than 10,000 restaurants of every conceivable type in New York, even life-long inhabitants of the city have claimed they need a computer to select the one they want. Now, at last, a computer will be available for just that purpose.

The RCA Electronic Data Processing exhibit at this year's BEMA Exposition contained two RCA Video Data Terminals linked to a computer programmed with a list of the City's leading restaurants.

The list is broken down ethnically as well as by location, price range, specialties-of-the-house, entertainment and other pertinent facts.

Exposition visitors keyed-in their dining preferences on one of the Video Data Terminals according to a predetermined code. Instantly a list of restaurants meeting the inquirer's specific needs was flashed on the screen, including telephone numbers and information on whether or not reservations are needed.

Other details on BEMA on page 4

## IBM Reduces Tape Prices By 13%

### Discontinues Supply Of All But Its Own Series/500 Tape

Major price reductions, stated to average 13% but higher (20%) in some cases, were quietly put into effect last week by IBM as it discontinued selling all computer magnetic tapes except the Series/500 to the domestic market. The new tape is being manufactured by IBM itself, in Boulder, Colorado. Previously IBM had bought its tape supplies from outside manufacturers, primarily the 3M company.

In an unusual marketing move, the company appeared to be almost hiding the size - or even the existence - of the reductions. The BEMA exhibit on the new tapes (which opened one day after the tapes were placed on the market) did not mention the reductions and the salesmen on the stand brought it up only if directly questioned. Similar reticence was shown in the various announcements, leading industry specialists to wonder why such a sales point was being so under played.

#### Suggested Reason

The most probable reason suggested for IBM's quietness was to minimize the immediate effect of its action on its competitors for the computer tape market. Stock speculations at this point of uncertainty could hurt, perhaps seriously, some of these smaller firms, and IBM would naturally not want to be blamed in any way.

#### Welcomed by Users

Whatever the reasons for the quietness on pricing, the new prices are certainly going to have a major effect on the industry. In general the independent computer tape manufacturers shelter under the IBM umbrella. Their selling point has been 'Just as good - but cheaper'. A period



PRINCETON, N.J. - IBM computer tape being produced at their Boulder facility.

of re-adjustment to the new level of pricing can be expected.

CONTINUED ON PAGE 5

**WORLD'S LARGEST COMPUTER STORAGE DEVICE:** This mass storage and retrieval system holds a trillion bits of data for computer processing. The data is stored in files of stacked trays resembling egg crates. Each compartment of a tray holds a plastic cell containing data recorded by an electron beam on 32 pieces of film.

#### Trillion Bit Data Capacity

### AEC Installs Largest Memory

LIVERMORE, CALIF. - The Atomic Energy Commission has completed installation of the world's largest computer storage system at the University of California Lawrence Radiation Laboratory here.

Storing this data by conventional computer methods would require more than one billion punched cards or a stack of magnetic tape reels over 1000 feet high. Any item in the system's file is directly accessible upon request and can be retrieved in seconds without scanning other items in the memory. Information is handled entirely automatically within the system.

More than one trillion bits of information - enough data to provide the average person with nearly 200 years of uninterrupted reading - can be stored by this photo-digital storage system which was built for the AEC by International Business Machines Corporation under a \$1 million contract.

Technical details will be given in next week's COMPUTERWORLD.

#### Better Rates For Time-Sharing Users

### New Common Carrier Service Approved

Washington, D.C. FCC Examiner, Herbert Sharfman, dismissed the objections of Bell, General Telephone and Western Union and approved the application of a new common carrier who said that they could provide cheaper communication services for time-sharing systems.

The applicant, Microwave Communications Inc., (MCI), intends to provide microwave services between Chicago and St. Louis in competition with the Bell System and Western Union. Examiner Sharfman said "There is no reason to believe that the system will not work, unless one is bemused by the unlikely concurrence of the catastrophes to which the (objecting) carriers' witnesses gloomily testified". He concluded that MCI may face serious problems in establishing its service but that its proposed rate superiority overcomes objections to letting it try.

MCI proposes to provide a service to meet the public need for a simple inter-office or inter-plant communication system. It would compete almost directly with the private line services offered by carriers. Potential uses would be to provide time-shared computer facilities. Unlike the services provided by the present common carriers, MCI subscribers would have to build their own private microwave systems to connect with the MCI stations, or make arrangements for connection with existing carriers.

#### URS's POLYTRAN Suitable For Cobol. PL/I

### 100% Translation Of Higher Languages Claimed

SAN MATEO, CALIF. - POLYTRAN, a new conversion system for use with "high level" programming languages such as FORTRAN, PLI, ALGOL and COBOL, has been developed by URS Corporation.

The distinctive feature of POLYTRAN is its adaptability to a variety of target and source languages and to unique user environments. In addition, POLYTRAN can be tailored for specific, individual requirements to make possible exceptionally low conversion costs.

The new URS techniques, presently implemented with COBOL, is said to be capable of translating 100 per cent of all procedure and data divisions in the program. POLYTRAN is currently used with an IBM System/360, but it is designed for operation with any machine.

"POLYTRAN" - derived from "POLYTRANslation analysis and programming" - is made up of three

basic parts: (1) a method of analysis and documentation of language and system compatibilities known as POLYSCAN; (2) a specialized programming language for the implementation and maintenance of language translators called POLYSYN (POLY-SYNtactical notation); and (3) a set of supporting subroutines labeled POLYGO.

Watch for  
Our

Fall Joint Issue

November 8



## Editorials

## Horror Stories

There are a number of types of computer horror stories. Sometimes, we have ones like the Chicago-based story which reported a computer that persistently dunned the people - for owing no dollars, no cents! Probably a case of the minus-zero problem. And, if so, a case of computer-programmer failure. Then we have a case of the non-responsive computer failure. Here we get the large book clubs, record clubs, etc., who never seem to receive our letters, never to respond to what we are saying. Again, it is a question not of program but of input problems. Perhaps there are program problems here, but these are probably not the direct concern of the systems analyst. Then we get the case of where a computer output promises something - but it simply does not happen. In a recent case in Louisiana, rejected tax returns were being sent out, with backup material promising that more information would shortly be provided. It wasn't.

These are all horror stories. The publication of them in the lay press makes them a matter of very considerable interest. It cannot be said that these do not interest people. Just listen to the talk around you, and hear many complaints about the foolish computers.

It would be nice if someone did explain what happened. Then the underlying fear of the computer might vanish, as people began to understand what the problem really was. Perhaps this is something that the local chapter of our various associations might concern themselves with. Supposing that they took notice of any horror stories published in their local areas, and then appointed a committee to investigate them. After the investigation, a very short (2 paragraph statement) could be issued to the press.

This might yet regain us the public confidence which we are fast losing.

## A Matter Of Moment

In a recent study by a well-known computer consultant, the results of a survey were interpreted as being an abdication of responsibility by management. COMPUTERWORLD has looked at the data on which this conclusion is apparently based, and finds it both interesting and informative, but not adequate to support this type of comment. The fact that senior management does not originate the successful ideas, (or that at least it passes credit for them to other people) does not mean that it has not selected them out of the many ideas presented. Management's function, in fact, is selection from the many possibilities.

To equate this to an abdication of responsibility is simply to oversell the capabilities of the data processing community. And to undersell the public relations capability, and the expertise of management is a temptation which we should avoid. Everyone in the computer community often believes that he could do a lot better job than the present management is doing. This is only natural. And sometimes it is true.

But it is bad community relations to make the results of such a survey, or such feelings, into a scientific case against the outsiders. Computer people must recall that we are cursed with the myth of omniscience which is associated nowadays with the computer, in the same way it was associated a few years ago with the printed page.

Under these circumstances, let us be less critical of others outside of our community.

## COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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Letters  
To The Editor

To the Editor:

We read with relish your recent editorial entitled "The Missing Users Group" and agree wholeheartedly that this is a need which must be fulfilled.

Your editorial is very timely and coincides with the plans we are currently making for the first "Keydata User's Forum". The forum is intended to give us an opportunity to discuss our plans for the future and allow our users to inform us how we may improve our service to them.

KEYDATA is the first on-line, real-time, time-shared computer facility to the general business community and, if we have our way, we shall also be the first to organize a user's group.

Congratulations to COMPUTERWORLD in also filling a need to the industry.

D.F. Cote  
Director

Keydata Corporation  
Cambridge, Mass.

To the Editor:

We are very much interested in obtaining additional information on a program "COMPAT F" developed by Caywood-Schiller as mentioned in one of your recent issues. Would you please let me know how I can contact Caywood-Schiller, as no address is given in your article.

D.P. Parker  
The Badger Company, Inc.  
Cambridge, Mass.

The address is:

Caywood-Schiller, Associates  
401 North Michigan Ave.  
Chicago, Illinois 60611

Ed.

To the Editor:

In the October 4, 1967 issue you had an article about a magnetic tape leasing plan available through Time Brokers, Incorporated.

Could you please advise the address of Time Brokers, Inc., so that I may get additional information?

Richard A. Schwartz, Manager  
Data Processing Department  
Midwestern United Life Insurance Co.  
Fort Wayne, Indiana

You can get additional information by writing:

Time Brokers, Inc.  
380 Lexington Ave.  
New York, N.Y. 10017

Ed.

To the Editor:

In October 4, 1967 issue you ran an article with reference to the Association of Data Processing Service Organizations (ADAPSO). Being a new facility in this field I would like to know how to write concerning functions of this organization and membership.

M.B. Villemagne, Jr.  
Thalhimer  
Data Processing Services  
Richmond, Virginia

Contact: ADAPSO, 947 Old York  
Road, Abingdon, Pa. Ed.

## Are Computers A Danger?

Computers And  
The Banking Industry

Banks are presently threatened by the computer age. There are two threats - one from the inside and one from the outside. The threat from the inside comes from the fact that they are getting less and less profitable. Despite improved earnings banks have not come close to keeping up with the progress of the U. S. economy as a whole. They are still losing more and more of the business of their best customers - the large industrial corporations. They continue to give away services - and increasingly costly services - to attract and hold business. This shows that all is not well with the industry, and that it must find some other, more profitable, part of the economy, not well with the banking industry, and that it must find some other, more profitable, part of the economy in which to practice if it is to survive. However, if the new, non-banking activity is really profitable then the independence of banks is threatened. This is no less a threat to the banking industry than if the banking functions were taken over by some outside concerns.

## The Open Attack

And this possibility, a very real one, does exist. Large retailers, like Sears, Wards, etc. have already started purchasing banks, and have made it very clear that the profits from financing their customers' needs are to be held, wherever possible, in the retailers' empire. Already the services offered by these companies, and those offered by banks overlap very considerably. They include credit cards, travel agencies - with built-in finance charges - even in a small way checking accounts. And certainly more is on the way.

A second area which is aiming at the banks' customers comes directly from the credit card firms. Firms like American Express, Diners Club and Carte Blanche clearly do not intend to confine their activities to the original small areas of travel and entertainment. As their computer systems come into full operation it can be expected that they will broaden their services and even though they do not replace ordinary banking services, the competition will probably make everyone's profits somewhat lower.

Loan companies, oil companies, each in their own way have also found the profit to be gained from financing the ordinary consumer. Both are in direct contact with millions of Americans. Both have adequate capability, and both are aggressive merchandisers. Here are further people who are in a position to effectively compete with banking.

## The Defense

Banks, of course, are not being too quiet and passive themselves. The setup of the servicers - (challenged by the ADAPSO Service Center organization in a recent court case) - shows that they are experimenting with broadening their activity base. Banks may very well take ownership of sizable retailers chains, in the same way that some trading stamp companies did. But this in itself will, as mentioned above, lose the identity of banks.

## The Real Threat

In fact, this is the essence of the danger that computers are to banks. They allow banking services to be offered by people who have time for other occupations - such as retailing. Equally they allow bankers to have time to think about offering such other services and to go and do it. If this is possible, then is there any reason to suspect it won't happen? If it does, is banking banking any more? Clearly, computers are a danger to banks.

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**Honeywell 400/1400 Users Meeting****Software Translator Success**

BOSTON, MASS. - The Honeywell 400/1400 Users Group met and heard of the progress of the Honeywell 400/1400 Series 200 Translator. A number of performance objectives were given, both for the translation, and for the program performance. In general, it looks as though the translation is taking between 1-1/2 and 2-1/2 man days per program, and requires about one hour of machine time per translator per day. Object Program efficiency seems to be around one-for-one (between the 400 and the 1200), as far as written-in-assembly-language programs are concerned. There is a major time improvement of up to 38 to 40% where FORTRAN, COBOL or sort programs are being handled.

**Many Installations Attend**

Despite the reduction in numbers attending caused by the 400-to-200 translator - which inevitably has removed many of the officers of the group - a hard core of installations seem determined to keep the 400/1400 users group a going concern. There present success is indicated by the fact that this time there were more installations represented than before, in fact, over 50% of the current 400/1400s were represented. The actual number of people attending the conference was, however, down, possibly because of the Government economy drive which is reducing the number of people attending conferences from Government installations.

**IBM Translator**

Some quick detail was given by a number of people about an IBM Honeywell 400-to-IBM 360 translator, which is being offered. There appeared to be two versions, one which deals with cobalt COBOL, and one which with COBOL and one which takes the assembly language. Not unnaturally, in

view of the circumstance of Honeywell being the host of the meeting, there was little public comment on the matter.

One government installation who was not represented sent a new operating system TILT. This has enabled considerable time economies to be made in the routine preparation of the daily program tapes for 400/1400s. Previously these have been prepared with all the programs for the day being placed on a special tape. However, with increasing activity, this has not been found practical, because of the searching up and down the master program library. Under TILT, the update run has been adapted to prepare small tapes for each individual program or program set. The installation reports a saving of 1-1/2 hours a day computer time with this approach.

**Tour Of Plants**

On the second day of the conference, a tour was made of the local Honeywell facilities including the engineering plants at Waltham and the main data processing centers at Wellesley.

**Calendar****CONFERENCES, SYMPOSIA**

Nov. 1 - 3, Chicago, Ill. - Annual meeting of the Industrial Management Society, Pick Congress Hotel, Contact: R.J. Mayer, Exec. Manager, IMS, 330 S. Wells St., Chicago, Ill. 60606.

Nov. 6 - 8, Urbana, Ill. - Computer Graphics Conference. Contact: Prof. C.W. Gear, Dept. of Comp. Sci., University of Illinois, Urbana, Ill., 61801.

Nov. 6 - 8, Kansas City, Mo. - Data Processing Management Assn. Fall Conference, Muelebach Hotel and the Municipal Auditorium, Contact: DPMA, 505 Busse Hwy., Park Ridge, Ill. 60068

Nov. 10, New York City - Symposium: Applications of Computers to Problems of Urban Society, Hilton Hotel, N.Y.C. Sponsored by ACM. Contact: J.M. Spring, Computer Methods Corp., 866 Third Ave., N.Y., N.Y.

Nov. 14 - 16, Anaheim, Calif. - Fall Joint Computer Conference. Convention Center. Contact: AFIPS, 345 E.47th St., N.Y. N.Y., 10017.

Nov. 27 - 29, New York City - American Management Assn. meeting on "Administrative Management in the Electronic Era," Contact: AMA, 135 W 50th St., N.Y., N.Y., 10020.

**USERS' MEETINGS**

Nov. 10 - 11, Anaheim, Calif. - Users' Meeting on Computers in the Laboratory. Jolly Roger Motor Inn. Sponsored by DECUS, Maynard, Mass., 01754.

**SEMINARS, WORKSHOPS**

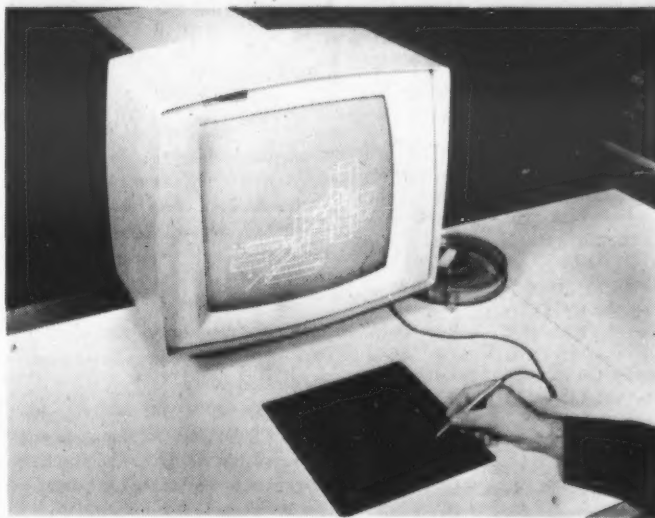
Nov. 2 - 4, New York City - Instructional meeting on "Effective Use of Simulation as a Management Tool." Contact: The American Management Association, AMA Bldg., 135 W. 50th St., N.Y., N.Y., 10020.

Nov. 15 - 17, Phoenix, Ariz. - 15th Annual Electronics Seminar, "EDP - Potential for Management." Sponsored by American Gas Association - Edison Electric Institute Electronic Data Processing Committee. Hotel Westward Ho, Phoenix.

**SHOWS, EXPOSITIONS**

Nov. 5 - 7, Minneapolis, Minn. - Business Equipment Show and Seminar of the Administrative Management Society, Convention Hall, Minneapolis Auditorium, Contact: AMS, Maryland Ave., Willow Grove, Pa. 19090

Nov. 6 - 9, Montreal, Canada - Canadian National Business Show, sponsored by the Canadian Business Equipment Manufacturers Assn., Inc., at the Place Bonaventure, Contact: G.D. Wynd, General Manager, 144 Victoria St., Toronto 1, Ont., Canada

**'Sketch' Input Available For 360's****Mathematicians Not So Necessary Now**

... RAND tablet, a development of the RAND tablet now available for use with IBM System/360, is seen here in use. An IBM display unit used to provide a visual monitor of the input is being presented to the computer.

Newport Beach, Calif. A new form of computer input became available to users of System/360 this week when Bolt Beranek & Newman Inc., licensees of RAND Corporation, introduced an interface unit which fits between a RAND tablet itself, and the selector or multiplexor channel of the 360.

Using the new device a 360 user can input and store a diagram simply by tracing it with stylus on the 10 inch square tablet inset into the desk-top of the unit. (See picture). Conducting elements, under the tablet top, note the position of the stylus to within .005 inches and present it to interface logic. This then examines it to see if it is worth while passing it into the computer. If the stylus has only moved a negligible amount, the new reading is disregarded and not passed on. This technique is called "data thinning", and operates under the control of the program. If it is worth while passing on an interrupt is created and the data sent on to a real-time program which stores it until required.

The check to see whether the data is worth while passing on, which takes place in the interface itself, allows the system to be practical on small computers.

Presently it is working on a 360/30 using a modified form of the standard Disk Operating System. Without the 'data thinning' action it would probably require the whole power of a 360/30. As it is, three programs are handled with ease.

The value of the Rand tablet is that it is a low cost alternative to the light-pen. The horizontal position of the tablet also makes it considerably more practical for many tracing operations that scopes cannot properly handle.

At the moment it is being used to store and bring back printed circuit diagrams. Other applications are opening up, such as the storage of architectural drawings - customers' signatures - stock curves - etc.

A principal advantage which business sees in it, is that in many cases the use of mathematicians will be able to be dispensed with. For example, a business-man wanting to examine the implications of a sales curve which he has just sketched can have it examined by the computer and interpreted without having to first pass it into any technical hands for examination.

**SWAP 13****Remote Batch Processing Discussed**

A number of unusually good papers were presented at the Control Data Lower 3000 Users Group meeting here this week. Included were papers from the company and from users themselves. The company papers concentrated on the newer operating systems, and their Respond system which provides time sharing services for display users. Respond, working under the Mass Storage Operating System (MSOS) was demonstrated throughout the conference by Control Data, and used by the conferees both to increase their first-hand knowledge of the new possibilities, and to keep up to date with conference activities - which were stored on a computer in Minneapolis.

The company papers dealt in practical, down-to-earth terms with the possibilities of the new era in computers opened up by the widespread use of communication lines.

Denis J. Dougherty talked about the SPEED system, which is designed for Remote Batch Processing. Remote Batch Processing is when users who have only a terminal or a small system use telephone lines to obtain the power and speed of some larger computer. In the case of SPEED (Supervisory Program for the Electronic Exchange of Data) the system is designed for using a relatively small system in Sacramento (an 8K 3100) to utilize power and speed of a larger system - in this case a 32K 3300 400 miles away in Los Angeles. It works without requiring that the 3300 is wholly dedicated to the operation, but does require all of the 3100.

In his paper, Mr. Dougherty went

through the hardware requirements, and through the details of synchronization and error control between the systems; and then brought out the two software systems involved - the one at the central location, and the one at the remote station.

Particularly welcome was the way the paper brought out some of the problems encountered in operation - whether the control Data hardware was concerned or not. Actually the Control Data hardware problems appeared to be confined to semantic questions as to just how to get an external end-of-operation code; while on the outside the co-ordination with the telephone company had apparently been a problem.

CONTINUED ON PAGE 7

**INFORMATION PROCESSING****Senior Analyst**

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94 Auburn Street  
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(207) 979-2191



## New Audit Software Suggested

## Clean Input Stressed By Bema

NEW YORK, N.Y.—Cleaning up input for computers seemed to be the major point underlined by the exhibits shown in the BEMA exposition. Two major approaches could be seen—the use of optical character reading and the improved methods of preparing keypunch data. Typical examples, described below, included Control Data and NCR's optical character readers, TAB Products Data Finder and Edison's Address Memory Unit.

## Peripheral And Supplies

All of these primarily interested themselves in producing cleaner input for computers; and so could be regarded as operational aids, rather than anything else. For the computer room itself, one of the interesting areas was the addition of new peripherals. The new Anelex 3500 on-line printer for use with 360s was attracting a considerable amount of interest on the Mohawk stand; and sitting quite quietly over at Control Data was one of the first Control Data disc packs! This was the first appearance of the disc pack from Control Data—who have not yet started their production plant into operation. Incidentally, their disc drives were appearing on both the GE and Honeywell stands.

## Show Too Noisy

The computers shown were not of great technical interest. On the whole, the noise near the computer area was disturbingly loud, and few people stayed in the area for very long. IBM followed the "Dedication to Service" theme in two fortress-like theatres, which were an effective way of getting the captive audience to sit still for 20 minutes or so. NCR offered its new

ADS system as a solution to the software management communication problem.

The papers and speeches in the BEMA program were often more interesting than many of the exhibits. A number of them were involved directly with the computer area. Richard G. Guiltinan, of Arthur Andersen & Co., was discussing the problem of the effect of EDP on the audit of corporate records. This is an old subject, and one which has been taken through many times. Generally the question has been whether or not, or to what extent, a computer record can be accepted by an auditor.

Interestingly enough, Mr. Guiltinan's comments were much more constructive. As he said, "Today's auditor must be prepared to utilize the tremendous tools available to him if he wants to provide his client's with useful service."

Basically, it was his line—which was welcomed by many of his listeners—that the advantages of EDP, far from being limited by the requirements of audit, should include the new possibilities of audit which only computers could provide. After listing some of the problems involved in the changing appearance of the audit trail in this computer age—the elimination of source documents, transaction listings, and a reduction in observable activities—the speaker suggested that the computer itself be used to examine the corporate records through a number of specific methods.

His suggestions included:

1. The use of the client's own interrogation process. With the develop-

ment of direct-access files, the auditor can use the ordinary interrogation procedures as part of the normal day-to-day transactions. With this approach the auditor can, with proper planning, have his file-searching needs met by the client's regular procedures.

2. Obtaining print-outs or dumps of the files. The use of the standard utility routines prevents any programming costs here.

3. The use of the auditor's own computer programs. If the programs can be constructed under the direction and control of the auditor, the auditor gains the opportunity to make use of the arithmetic and logic capabilities of the computer.

For instance, the use of a computer audit program provides the opportunity to audit-by-exception, such as printing out only those records which do (or do not) meet the criteria determined by the auditor.

Computer audit programs have been used to handle such points as checking extensions, footings, selecting and printing records, examining records, preparing data, analyzing data. The experience gathered is apparently still limited, but these programs do offer a potential savings in the cost of audit and are looking to improve the product by permitting a more comprehensive and accurate examination.

One interesting characteristic is that it may be possible to create "common"

CONTINUED ON PAGE 6

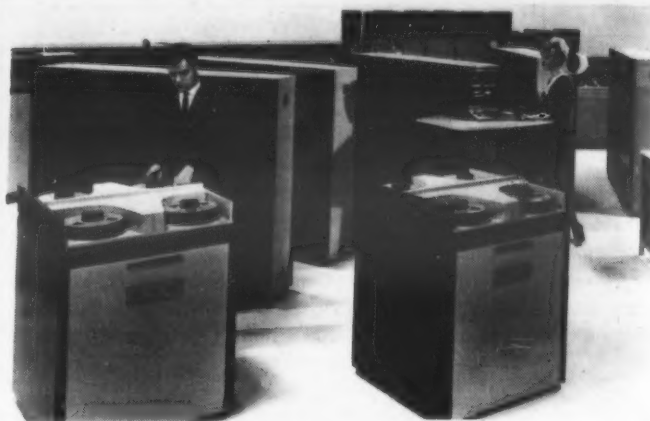
## Anelex Printers Offered By Mohawk

For direct on-line operation with the IBM System/360, Anelex presented two complete printer systems, each fully buffered and including all control logic. The Anelex 3500 On-Line Printer connects directly to the 360's multiplexor channel. All control and logic circuits required to transmit information between the 3500 and the multiplexor channel are contained in the Printer Control Unit (contained in a cabinet console with the Series 5000 Printer). Interconnection of the 3500 Printer with the 360 is accomplished by connecting the 360 I/O cable from the desired I/O channel to a connector on the printer.

The difference between the two models is in the operating speed—the medium speed model works at 750 lines per minute; while the high speed model works at 1,000 lines a minute if only 48 of the 64 characters available on the drum are used, or at 1250 lines a minute if more than 48 are used. No changes in the software are needed to operate the printer, as it uses the same coding as the IBM printers. The print line itself can be increased to 160 characters if required.

## Service Available

The printer has previously been available only on the OEM market, as the Anelex Corporation did not have the service facilities to provide the necessary field support. Now that the merger with Mohawk Data Systems has taken place, the servicing of the printers is being integrated into the general servicing facilities of the Mohawk field force. Users of 360s can now buy the printer direct and have it supported by Mohawk.



A typical large B3500 data processing system for commercial or financial use might include both free-standing tape units and the new tape "cluster" (foreground), and random access disk file modules. The B3500 multiprogramming system was shown at BEMA.

## B3500 Multi-Programming Shown

A major attraction at the Burroughs stand was the demonstration of a method called "multiprocessing", the ability of a B3500 electronic computer system to handle several jobs simultaneously.

Through its comprehensive operating system, called the Master Control Program, the B3500 multiprocesses automatically, coordinating internal operations to keep the processor, core memory, input/output units and peripherals working full time, rather than intermittently. The Master Control Program automatically directs a mix of in-

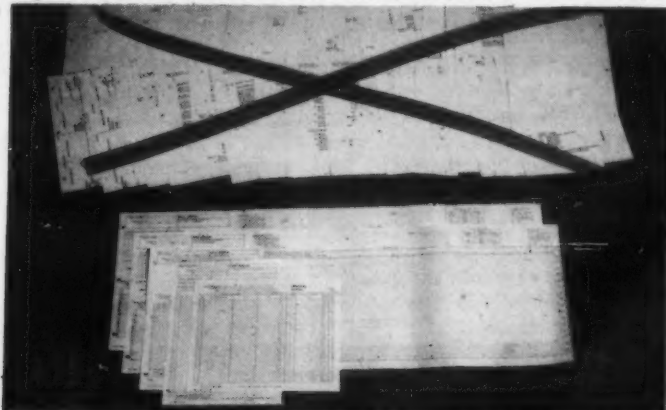
dependently programmed jobs through the system, making the best possible use of hardware. Programmer efficiency is increased by removing all phases of I/O control and memory allocation from the programmer and allowing him to concentrate on programming his problem rather than the computer.

The Burroughs 3500, and its program-compatible 2500, are in the small-to-medium price bracket, renting at between \$4,195 for a small B2500 with tapes, and \$20,720 for a large, disk B 3500.

## Clean Input System Provided For Repeated Data From Remote Sites

Clean, accurate input to a computer has been made possible with the introduction of Thomas A. Edison Industries' Address Memory Unit. The compact electro-mechanical magnetic device permanently stores information from a Teletype transmitter. Up to 1000 items can be stored on the unit, which includes a writing tape on which visual entries are made and a magnetic tape for storing fixed code information.

The operator scans the Memory Unit to the desired entry and taps a start bar. The Teletypewriter prints fixed information and a punched paper tape is prepared for use in addressing the computer. The 12 pound unit can be programmed to stop at any point during read-out to allow insertion of variable information from the keyboard.



NCR INTRODUCES ADS (Accurately Defined Systems) at the Business Equipment Manufacturers Association exposition. They believe that improved communication and exact documentation of systems development will result from the use of the system. In use, ADS uses five forms to replace the conventional narrative.

## NCR Offers A Solution To Data Management Problem

A new communications technique block in systems development has been to improve management control of the programmer's "narrative", which was usually incomprehensible to management. Designed to organize, document and schedule the development of software, ADS (Accurately Defined Systems) makes use of interrelated forms and standard procedures to enable both the experienced systems analyst and the person without systems experience to define an EDP application in an organized manner.

The company claims that ADS gives the systems analyst a standard way to communicate his work and gives management a performance measurement that can be audited at all times. The copyrighted system can be used by any company on any type of EDP equipment.

As NCR sees it, the big stumbling

The ADS discipline forces the systems analyst to follow a step-by-step approach which saves him time and trouble and produces a systems blueprint he can give to the programmer to implement. The blueprint also makes things clearer to management.

The five interrelated forms used by ADS are: reports definition, input definition, computation definition, history definition and logic definition. None of the forms is equipment-oriented; they concern only the information relationships required to accomplish a given EDP application.

## computers &amp; europe's top 50

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## Uniscope 300 Shown At Bema

The Univac Division of Sperry Rand introduced the Uniscope 300, a keyboard operated, visual communication terminal with a precision display screen. The Uniscope is available in two versions, the 300S, a self-contained single station, and the 300M.

The 300M multi-station comprises a keyboard and display unit. From two to 48 300M terminals can be used in a system with a single control unit.

The basic keyboard has 61 keys, and up to 40 more can be added for specific applications. Sixteen lines of information with up to 64 characters in each line can be presented at one time on the 10" by 5" viewing area.

The 40 keys which can be added are "function" keys, and have a second keyboard to the right of the main one.

Robert O'Hare, Univac's Technical Marketing Manager for Communication Systems who was demonstrating the device, said that the idea of the function keys was to allow an input "Short-hand" to be specially designed and used for particular applications. This could both reduce the computer time used, and also the volume of work involved in originating messages from the keyboard. By changing a template over the set of function keys it was possible to segregate either one application from another - or one set of inputs from another, while keeping the advantages of the system going.

Software for the system is planned for March delivery on the Univac 494 and 1108 systems - to coincide with the first customer deliveries of the Uniscope 300. The unit was welcomed last month at the Joint Univac Users Association meeting in Minneapolis - where requests for unscheduled demonstrations kept the Univac people busy throughout the three day meeting.

## Orders and Installations

Two advanced RCA computer systems will be installed in Eaton Yale & Towne's new Telecomputer Center in Eastlake, O. this fall as the nerve center of a worldwide communications network which eventually will link all of the firm's plants.

Comress, Inc. announced a continuing lease agreement with the Fluor Corporation of Los Angeles, Calif. Comress will provide the corporation with the SCERT (Systems and Computers Evaluation and Review Technique) simulation systems to measure performance capabilities of EDP information systems currently being designed for Fluor.

Hawaiian Electric Company is using an IBM 1800 data acquisition and control system to monitor and assist in remote control of transmission lines, transformers, switches and circuit breakers to provide better service to customers on the island of Oahu.

M & S Computer Service, Inc., an affiliate of Valley Transit Corporation, has installed the first Univac 9200 Computer System in the Chicago area. The computer was supplied by Sperry Rand Corporation's Univac Division.

Scientific Data Systems was awarded contracts to supply four 9300 computers valued at \$3 million. The new awards call for shipment of one 9300 computer to McDonnell Douglas Co., Huntington Beach, Calif., and three of the systems to General Electric Co., Daytona Beach, Fla. during 1968. The equipment will be employed in ground checkout of aerospace vehicles and launch systems for the Air Force Manned Orbiting Laboratory program.

## November Meetings

The month of November will usher in a number of seminars and instructional meetings of interest to members of the computer community. Among them are the Annual Symposium of the Association of Computing Machinery and a five-day course sponsored by the American Management Association.

"Application of Computers to the Problems of Urban Society" will be the subject of the ACM Symposium, to be held at the New York Hilton Hotel on November 10. The morning session will include an opening address by Dr. E.S. Savas, Deputy City Administrator of New York, and discussions of urban management information systems, computers and urban planning and operations research in municipal management by guest speakers.

The afternoon session, divided into three sections, will consist of the reading of fifteen contributed papers. Under Secretary Robert C. Wood of the Department of Housing and Urban Development will deliver the luncheon address.

The registration fee, which includes luncheon and coffee, is \$18, or \$10 for students with identification.

AMA's five day course, entitled "Data Processing for the Personnel Department", will be held November 6 - 10 at the AMA headquarters in New York. Chairmen are George C. Olson, Personnel Systems, Randolph, Mass. and Paul Schliffe, Manager, Data Systems Development, AT&T, New York.

Guest speakers will be: Quentin E. Hughes, Personnel Specialist, Polaroid Corp.; Henry C. Maguire, Northeast Regional Manager, the Jonker Corp.; Philip L. Morgan, Vice-President, Personnel Systems Division, Information Science Inc.; Dr. Paul B. Henderson, Jr. Manager, Information Systems, United Aircraft Corporate Systems Center; A. J. Cassell, Manager, Group Personnel, Data Systems, IBM; and Christopher P. Desmond, Manager of Organization and Manpower Planning, CBS.

The nine part course will include discussions of: the integrated personnel data system, familiarization with data processing concepts, essential of a good personnel data system, two case studies, skills inventory; a manual approach to a personnel data system, applications of EDP to personnel planning and questions the systems man needs answered before a system is installed.

Course information is available from: Registrar, AMA, AMA Bldg. 135 W. 50th St., New York, N.Y. 10020., Tel. (212) JU 6-8100.

AMA courses are also scheduled for December 4-8 in Los Angeles and January 29-February 2 in New York.

## Cover Story COMPUTER MODELS AIR

Yorcktown Heights, N.Y. Some details of a computer simulation of air conditions in Connecticut were revealed here by Dr. Glenn R. Hilst, vice president of The Travelers Research Center in Hartford. The model uses pollution survey data drawn from emission sources such as power plants, factories, home heating units and motor vehicles, to generate street-level pollution readings at 5,600 locations throughout the state.

Historical information, such as how polluted the air was near a Waterbury industrial plant last July - or predictive data, such as an estimate as to how dirty the air will be on a downtown New Haven street during the evening rush hour next week, can be obtained from the model within a few seconds.

Dr. Hilst said that the system is able to prepare a map of the state showing a complete picture of pollutant concentrations, including the amounts of sulphur dioxide, carbon monoxide, nitrogen compounds and soot in the air. (See picture).

They can also determine the wind-blown patterns of pollutants coming into the state from outside areas.

The model is being used to test many alternative methods of improving air quality, by simulating the potential advantages to be gained by closing certain industrial plants at critical periods, banning the use of fuels containing a high content of sulphur or other measures.

Dr. Hilst was talking at a scientific computing symposium at the Thomas J. Watson Research Center. The work has been funded by the Connecticut Research Commission.

## TECHNICAL DATA ON NEW IBM TAPE

CONTINUED FROM PAGE 1

The outline below gives a comparison of the characteristics of IBM's new tapes versus its previous offerings.

### ADVANTAGES OVER PREVIOUS IBM TAPES

**First pass write checks:** Fewer first pass write checks on the average.

**Full file performance:** Half as many write errors on the average.

**Short section performance:** Iq tests conducted on 2400 Series drives - each tape tested to over 600,000 head feet - 80% of the tapes tested remained without permanent read error.

**Durability:** Short section durability test indicated a 2-1/2 times longer life.

### SPECIFICATIONS

**Noise:** If any defect results in spurious signal which might be recognized as bit signal by tape drive, entire tape rejected.

**Signal Quality:** If any recorded bit cannot be recognized above minimum specified level, entire tape rejected.

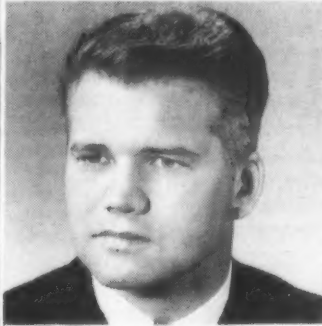
**Signal Level:** If average of all pulse amplitudes over each inch of tape does not meet specification, entire tape rejected.

**Dynamic Skew:** If any deviation in tape tracking is detected that might cause bit pattern to be recorded improperly, entire tape rejected. Only those tapes that pass all quality tests are certified under terms of IBM Warranty/Guarantee.

### PRICES

1600 BPI, previously \$48, now \$37; 800 BPI, previously \$46, now \$35.

## EDPeople



Charles S. Breen has been appointed District Sales Manager for New England by Ferroxcube Corporation. Mr. Breen came to Ferroxcube in 1964 from General Electric Co. where he was a test engineer on the Polaris system.

Herbert Smith has joined Scientific Data Systems as director of the printed circuits department. For the past six years, Mr. Smith has been manager of printed circuits at Lockheed Electronics Company.

Robert C. Koenig, of Honeywell Electronic Data Processing, has been appointed Branch Manager of Honeywell's St. Louis branch office. Mr. Koenig will be responsible for the sale and installation of Honeywell's third generation computer line, the Series 200, in the greater St. Louis metropolitan area, as well as portions of Illinois and outstate Missouri.

George Field has joined Sanders Associates, Inc. as manager, public relations, a newly created position.

John E. Buckley has been named Manager of Marketing Services in Sperry Rand Corporation's UNIVAC Data Processing Centers Division. In his new capacity, Mr. Buckley will be responsible for marketing services conducted at some 20 computer service centers operated by the Division throughout the United States.

Robert E. Bomeisler was appointed manager - major programs of Scientific

Data Systems. Prior to joining SDS, Mr. Bomeisler was associated with RCA for seven years in various sales and general management positions.

Three key managerial appointments in Computer Sciences Corporation's San Diego operations have been announced: Roy A. Levine has been named manager of the Advanced Systems Department, Donald B. Craig has been appointed manager of the Data Systems Department, and Mitchel S. Karp has been named associate manager of the Data Systems Department.

Arthur E. Krapf, a retired U.S. Navy captain and an engineer with a broad range of experience in antisubmarine warfare, has joined Librascope Group of General Precision Systems Inc.

Alexander E. Patterson, Jr., vice president, Area Operations, has been elected vice president, Data Processing Marketing, for IBM World Trade Corporation. Mr. Patterson joined IBM Corp. in 1949 in New York City. He served in a number of marketing and managerial positions in IBM prior to joining IBM World Trade in 1957.

Joseph E. Hannah has been promoted to Manager of the Communications District of the Washington Region of Control Data Corporation. Hannah's responsibilities in the newly created position include the management of communications programs for the firm. He was formerly Manager of Communications Systems at CDC.

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- Reformat data from tapes written by other program languages
- Read backwards, and forward space blocks and files
- Process multi-file reels, as well as multi-reel files
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**Additionally, DOS/TOS and BPS FORTRAN users are provided the OS capacity to:**

- Read tapes written by other program languages
- Write tapes acceptable to utility programs, such as Sort/Merge
- Read or write blocked or unblocked records

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## FINANCIAL MATTERS

**FULLERTON, CALIF. — Beckman Instruments, Inc.:** Eight per cent gain in earnings on six per cent sales growth for the first quarter of the year over the same period a year ago. Earnings for the quarter, ended September 30, were \$1,341,135, or 40 cents a share, on sales of \$31,704,540. For the first three months of last year, earnings were \$1,236,073, or 37 cents a share, on sales of \$29,836,368.

**EL SEGUNDO, CALIF. — Computer Sciences Corp.** earned \$1,460,000 on revenues of \$12,500,000 for the 13 weeks ended September 29. Earnings for the same period last year were \$284,000 on revenues of \$8,748,000. Per share earnings increased from \$.07 to \$.34.

**NEW YORK, N.Y. — IBM** declared a regular quarterly cash dividend of \$1.10 per share on the capital stock, payable December 9, 1967 to holders of record November 9, 1967.

**PLAINVIEW, N.Y. — Potter Instrument Co., Inc.** reported earnings of \$276,500 on revenues of \$3,307,000 for the 12 weeks ended September 23. During the same period last year, earnings were \$200,500 on sales of \$2,858,500. Per share earnings increased \$.03, from \$.09 to \$.12.

**GREAT NECK, N.Y. — Leasco Data Processing Equipment Corp.** will redeem all outstanding 6-1/2 convertible subordinated debentures due January 31, 1987 on November 14 at a price of 106.50% of principal together with accrued interest to redemption date. Until November 10, the debentures can be converted into common stock at a price of \$40 per share.

### Clean Input

CONTINUED FROM PAGE 4  
computer audit-programs. The "common computer audit-program" differs from a computer audit program in that the former can be used to examine records of several clients whose records may be in different companies. The use of such a program will change the format of any client's records to a format that can be used by the common program. Such common formats can be examined at a very low cost. The speaker commented that the use of such programs is very embryonic, but he is expecting it to be greatly increased in the future. He emphasized the need for computer orientation in the training process, both at the colleges and at the professional level.

### 'Little Genius' Shown

**BOSTON, MASS., Oct. 20—**The new "Little Genius" computer and other computing and instrument products will be exhibited by Electronic Associates, Inc. at NEREM '67, to be held Nov. 1-3 in the War Memorial Auditorium here.

The "Little Genius" is the EAI 580 Analog/Hybrid Computing System. The 80-amplifier, 10-volt, desk-top system was first introduced in August, 1967, at WESCON.

In addition to the 580, EAI will exhibit their TR-20 desk-top Analog Computer and a line of EAI VARI-PLOTTER (X-Y Recorders). Also to be exhibited is the recently introduced EAI Series 6200 Digital Measuring System.

## How They Moved Last Week

Week Ended October 27, 1967		1967		Week		Week		Week	
		High	Low	High	Low	Last	Net Change	Week	Week
NEW YORK STOCK EXCHANGE									
Addressograph-Multigraph	73	46 7/8	73	65 3/4	72 3/8	+ 5 3/4	+ 8.63		
American R&D	162 1/4	37 3/4	162 1/4	140 3/4	156 3/4	+10 1/2	+ 7.18		
Ampex Corp.	40 3/4	22 3/4	35 7/8	33 3/4	33 3/4	- 3/4	- 2.17		
Burroughs	174 1/8	80 7/8	170 7/8	157 3/4	166 7/8	+ 4	+ 2.56		
Collins Radio	114 7/8	53	104 7/8	92 5/8	104 1/4	+ 8 7/8	+ 9.31		
Control Data	163	33 1/2	163	142	157	+10	+ 6.80		
Electronic Associates	30 1/4	16 3/4	29	26 1/2	27 1/8	- 1 1/2	- 5.24		
General Electric	115 7/8	82 1/2	110 1/2	105 3/4	109 1/4	+ 2	+ 1.96		
Honeywell	100 3/4	63 1/2	100 3/4	88 7/8	96 3/8	+ 6 1/8	+ 6.79		
IBM	599 7/8	362 1/2	599 7/8	585	597 1/2	+ 1 1/4	+ 0.04		
Litton	120 3/8	79 1/2	120 3/8	109 1/8	119 7/8	+ 9	+ 8.12		
Nat Cash Register	131	67 1/8	131	117 1/2	126 1/4	+ 6 1/2	+ 5.43		
RCA	64 1/8	42 5/8	64 1/8	60 1/2	63 3/8	+ 1 1/8	+ 1.81		
Raytheon	114 1/4	49	114 1/4	99 1/2	110 1/4	+ 8 1/4	+ 8.09		
Sanders	68	37 5/8	68	58 1/2	60	- 3	- 4.76		
Scientific Data	135 1/2	70 3/8	135 1/2	117	133 1/2	+11 3/4	+ 9.61		
SCN	82 1/4	44 1/2	48 1/4	44 1/2	46 1/2	- 2	- 4.12		
Sperry Rand	57 7/8	28 1/8	57 7/8	48 1/8	55 3/4	+ 6 5/8	+13.49		
NYSE COMPUTER STOCK AVERAGE							+ 4.58	+ 4.03	
AMERICAN STOCK EXCHANGE									
Audio Devices, Inc.	30 3/8	21 5/8	24 1/2	22	23 1/2	+ 1 1/4	+ 1.08		
Automatic Data Processing	50 3/4	41 1/2	47 1/2	42 5/8	47	+ 3 3/4	+ 8.68		
CalComp	99 1/2	60 1/4	87 1/4	78 1/8	86 3/8	+ 2 3/8	+ 2.83		
Computer Applications	39 3/8	14	39 3/8	33 1/8	35 7/8	+ 3/4	+ 2.14		
Computer Sciences	47 3/8	18	47 3/8	38 1/8	42 1/8	+ 2 1/8	+ 5.31		
Digital Equipment Corp.	124 7/8	29 3/8	124 7/8	110	121	+11 1/2	+10.50		
GC Computer Corp.	41	23 1/4	28 5/8	26 3/8	27 1/4	- 2	- 6.84		
Leasco	93 1/2	33 5/8	80 3/8	73	77 1/4	+ 2 1/4	+ 3.00		
Levin-Townsend Computer Corp.	57	10 7/8	52	45 1/4	51 7/8	+ 3 3/8	+ 6.96		
Wilco Electronics	15 5/8	5 1/8	11 3/8	10 1/2	10 7/8	- 3/8	- 3.33		
Mohawk Data Sciences	181	155	181	155	179 1/2	+ 25 1/2	+22.12		
Planning Research	69 3/4	19 5/8	69 3/4	34 1/8	66 1/4	+12	+22.12		
Potter Instrument	37 3/8	12 3/8	31 3/4	26 3/8	31	+ 7/8	+ 2.90		
Randolph Computer Corp.	44 7/8	33	40 1/4	37 1/2	38 1/2	- 1 1/2	- 3.75		
AMERICAN STOCK AVERAGE							+ 2.72	+ 3.97	

1967		Friday		Last Friday		Week Net Change		Week % Change	
High	Low	Bid	Asked	Bid	Asked	Bid	Asked	Bid	Asked
OVER-THE-COUNTER									
Applied Data Research	26 1/2	3 1/8	26 1/2	28	20 1/2	+ 6	+29.27		
Bolt, Beranek & Newman, Inc.	30	8 1/4	23 3/4	24 3/4	24 3/4	- 1	- 4.04		
C-E-I-R, Inc.	22	6 5/8	21 1/2	22	19 1/2	+ 2	+10.76		
Computer Usage	60 1/2	20 1/4	60 1/2	62 1/2	50 1/2	+10	+19.80		
Cyber-Tronics	17 1/2	4 3/4	12	13 3/4	12 1/4	- 1/4	- 2.04		
Data Products	17 7/8	2 1/2	15 1/8	15 5/8	12 1/8	+ 3	+24.73		
Digitronics	18 1/4	6	14 3/4	15 1/4	15 3/4	- 1	- 6.35		
DPA, Inc.	16 1/4	4 1/4	9 1/2	10	9 3/4	- 1/4	- 2.57		
Electronic Memories	55 1/2	12 3/4	55 1/2	56 1/2	51 3/4	+ 3 3/4	+ 7.25		
Fabri-Tek	15 3/4	6	9 5/8	10 1/8	10 1/2	- 7/8	- 8.33		
LMC Data, Inc.	13 5/8	7 3/8	11 3/8	11 3/4	12 1/2	- 1 1/8	- 9.00		
Management Assistance	24 3/8	10 1/8	10 1/8	10 1/2	12 1/4	- 2 1/8	-17.35		
Memorex	226	63	191	195	208	-17	- 8.17		
Optical Scanning Corp.	92 1/2	25 3/4	63 1/2	65 1/2	86	- 2 1/2	- 3.79		
Recognition Equipment, Inc.	131	48 1/2	104	113	96	+ 8	+ 8.33		
Systems Engineering Labs	56 3/4	8 7/8	56 3/4	57 3/4	54 1/2	+ 2 1/4	+ 4.13		
University Computing Co.	128	65	128	129	118	+ 8	+ 6.78		

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# EDP Schools-What You Can Do

## EFFORTS NEED EFFORT

Last week we reported in these columns an FTC action which will prevent some misleading advertisements appearing in the papers. This week we are very happy to give space to some constructive suggestions by the head of a chain of computer training schools as to what we, as members of the community, can do to prevent such actions. Some of these actions may seem a bit troublesome, such as the suggestion that we encourage our state governments to take legislative action. Some may appear to take up unnecessary time, such as the suggestion that we attend our chapter meetings and persuade the directors of the various EDP schools to come in and talk, and to tell us about how they are handling the problems. Almost all of them involve us in some effort.

But we are members of the data processing community. Within this community, like any other community which is to be worthwhile, we must expect to have to do some community work. We have, on the whole, been very well paid for joining. Our salary scales, as shown in the recent surveys published in this newspaper, are good. Our prospects are excellent.

Surely, under these circumstances, it is not too much to ask that we do give a bit of personal effort to support the efforts of those around us.

Here are some constructive suggestions as to where to put the effort.

The following suggestions were contained in an invited speech given before the Washington, D.C. Chapter of the ACM by Mr. Sven A. Larsen, President of the Control Data Institutes.

1. As members of ACM, and as citizens, you should actively encourage state legislatures to pass legislation which will make it difficult, if not impossible, for unethical computer schools to operate. California and Illinois have taken this step already.
2. You should encourage the local news media to make an in-depth report on computer schools in the area. There is nothing that frightens the unethical operator more than close and incisive scrutiny.
3. You should encourage the efforts of accrediting agencies such as the

National Association of Trade and Technical Schools. Our Control Data Institutes have applied to this body for accreditation and I can assure you that they do not leave a stone unturned in their examination of a school, before they grant accreditation.

4. You should invite the Directors of the local computer schools to attend meetings such as this one. Ask them to describe for you in detail what and how they are teaching. These Directors and their staffs will welcome constructive criticism and comments from you. You may also be pleasantly surprised with the high caliber of some of these people.

5. When you find a school that engages in unethical practices, call it to the attention of the Better Business Bureau or the Federal Trade Commission. We are just as anxious as you are to get rid of those few that are taking advantage of the public.

6. Send a letter to all of the high school counselors in the area in which you point out the thing that a young man or woman should look for when selecting a computer school. You might also advise these counselors how much salary the graduates of these schools are getting when you hire them.

7. You should actively encourage the local high schools, junior colleges

and universities to expand their training capability in the general field of computing.

8. Finally, encourage this dialogue which was started this month by the ACM-DPMA Joint Committee on Education and Training. This will do much to foster a healthy working relationship between the proprietary computer training schools and the computing profession.

## SWAP Meeting

CONTINUED FROM PAGE 3

Performance detail indicated that 250 chars/second, in either BCD or binary mode, was the approximate data rate; that transmission errors were occurring only 0.1% of the time and were of much less consequence than the occasional loss of a block during the transmission. This does occur 1% of the time, and the cause has not yet been determined. However the system recovers automatically, and re-transmits.

The idea of the presentation was to allow listeners to understand what was involved in this style of operation - for which there is a growing demand among users.

Other papers came from Canada and South Africa, as well as from users in the USA. The South African paper dealt with some extensions to COBOL and to the MASTER operating system which had been made at the South African Iron & Steel Industrial Corporation, where they are installing a dual 3300 system. The primary change was to allow direct access to records on mass storage files by means of a user-supplied 'key' instead of being forced to use a file address. These abilities had also been added into the COBOL using ENTER verbs.

## Univac In Japan

Mainichi Broadcasting System, one of Japan's largest commercial radio and television networks, will introduce real-time electronic data processing to the Japanese commercial radio and television business with the installation of a Sperry Rand Univac 418 Computer System.

Scheduled for delivery this month, the 418 will be installed in Mainichi's main studios in Osaka.

The Canadian entry described a series of modifications to the CDC PERT program which had been made at the Sir George Williams University in order to make it a 'saleable' piece of software. Beyond dealing with some bugs in the program, it also modified the report format, making it more suitable to the clients of the University's service center. It also touched on the problem of difficulties encountered when loops occur in large networks.

Two USA papers dealt with items which will rarely be found in official company software publications. One discussed the virtues of a withdrawn software system - Basic Disk. This is a system for disk-only 8K systems, and was urged, by T.A.Olsen of General Mills Inc., as an economic competitor for later systems. The other paper from the USA, handled the successful interfacing of CDC 3100 with a competitive system - in this case a Univac 1108.

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## New Technical Reports From NBS

The Institute for Applied Technology of the National Bureau of Standards has announced the availability of certain government reports on data processing for sale by the Clearinghouse for Federal, Scientific and Technical Information. Of interest to our readers will be the following:

PB-175 666 - FINAL REPORT ON A STUDY OF THE REMOTE USE OF COMPUTERS, G.O. Collins, Jr., Informatics, Inc., for the National Bureau of Standards, Jan. 67, 108 p. Study is divided into three phases, of which this report is the third. It is devoted to analysis of data and information collected on remote computer systems with emphasis on time-shared systems. Current state-of-the-art is presented with recommendations for areas needing further work and standardization. Although this report is intended to be self sufficient, reports covering Phases 1 and 2 are available. Order: PB-175 664 and PB-175 665, both titled A STUDY OF THE REMOTE USE OF COMPUTERS.

AD-658 196 - COMPUTER COMPILER ORGANIZATION STUDIES, R. Barbieri and J. Morrissey, John Morrissey Associates, Inc., New York, N.Y., for the Air Force, May 67, 121 p. Describes the organization of compilers to realize increased system efficiency in the areas of better hardware utilization, reduced compilation overhead, and improved man-machine communication.

AD-665 789 - RESEARCH ON INTELLIGENT QUESTION-ANSWERING SYSTEM, C.C. Green and B. Raphael, Stanford Research Inst., Menlo Park, Calif. for the Air Force, May 67, 52 p. Describes progress toward an "intelligent question-answering system" that can accept facts, retrieve items from memory, and perform logical deductions necessary to answer questions. Gives examples of performance of two systems.

PB-175 706 - FEASIBILITY OF COMPUTER STORAGE AND RETRIEVAL OF FREIGHT TARIFF INFORMATION - PHASE II, Battelle Memorial Inst., Columbus, O., for the U.S. Dept. of Transportation, May 67, 323 p. Analyzes the ways tariff information is used by shippers, carriers and related agencies. Gives flow charts of computer logic for storage and retrieval of routing, accessorial charges, and for five rules governing calculation of freight charges. Also, cost guides, data storage requirements, possible computer hardware configurations for different classes of users. The two reports of the same title comprising Phase I are available: PB-170 590, PB-170 591.

AD-657 314 - JOSS: ACCOUNTING AND PERFORMANCE MEASUREMENT, G.E. Bryan, Rand Corp., Santa Monica Calif., for the Air Force, June 67, 69 p. Describes portions of the monitor that produce accounting records of changing functions and that gather performance statistics of typical user operation, overall system usage, and machine performance.

AD-658 158 - DEFENSE INTELLIGENCE AGENCY MANUAL OF DATA PROCESSING STANDARDS, Defence Intelligence Agency, Washington, D.C., Sept. 66, 450 p. Establishes standards methods and procedures for analysis, design, programming, and operation of the Automatic Data Processing Systems (ADPS) Center, and defines personnel and equipment performance standards and methods of control and evaluation of performance standards so that maximum utilization of the ADPS Center's resources will be achieved.

The reports are available at \$3 each from the Clearinghouse, U.S. Department of Commerce, Springfield, Va. 22151. They should be ordered by number and title, and prepayment by coupon, check or use of a Clearinghouse deposit account is required.

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